
“NOAA’s vision for the next decade is to increase the Nation’s wealth and quality of life for Americans by ensuring sustainable fisheries that provide safe seafood, a healthy fishing industry, and recreational opportunities.”

NOAA Strategic Plan, 1996

The Nation’s living marine resources (LMR’s) are under the stewardship of the U.S. Department of Commerce’s National Oceanic and Atmospheric Administration (NOAA), National Marine Fisheries Service (NMFS). The preceding quote is NOAA’s vision statement for the future of LMR management. The agency has had great success in assessing and predicting the biological status or health of fishery stocks, and has made recent progress in managing for biologically sustainable fisheries. NOAA is now poised to begin incorporating management strategies which ensure that fisheries are also economically sustainable. This report defines and characterizes economic sustainability in fisheries, and presents a preliminary assessment of the economic health of the Nation’s fisheries. Management options that might best promote a healthy fishing industry in the long run are discussed. Thus the report complements the agency’s biennial report on the biological status of fishery resources, *Our Living Oceans*, with a comprehensive description of the economic status of the Nation’s fisheries. It also suggests some prescriptions for better economic health.

Our Living Oceans (USDOC, 1993) defines a fishery resource as fully utilized “...when the amount of fishing effort used is about equal to the amount needed to achieve long-term potential yield (LTPY) and where the resource is near its LTPY level.” The resource is overutilized “...when more fishing effort is employed than is necessary to achieve LTPY.” These definitions are characterized as biological indicators of health because they have as a reference point the achievement of LTPY, the maximum sustainable level of harvest from a biological standpoint. From an economic standpoint, a fishery resource is optimally utilized when the amount of fishing effort used to achieve any level of harvest is at the point where net economic benefits to the Nation are greatest,

or at lowest cost for that level of harvest. This means harvesting only to the point where the additional benefits from harvesting the last fish just equal the additional costs incurred to harvest it. At harvest beyond that point, resources like capital and labor would be put to better use in other parts of the economy, because the cost of using them to catch more fish is greater than the benefit provided by having the extra fish. In many fisheries, the economically sustainable level of harvest is lower than the biologically sustainable level.

It is important to employ management strategies that ensure economic sustainability because left unregulated, most fisheries will operate at levels of harvest greater than both the biologically and economically sustainable points. This occurs because most U.S. fisheries are subject to conditions of open access, meaning that participation is unrestricted. The biological, economic, and managerial problems associated with open access are well known. These include lower yields, declining stock and harvest levels, “derby” style fishing where fishermen race to catch limited amounts of fish, shortened fishing seasons, excess capacity to harvest and process fish, unsafe fishing conditions, volatile prices and landings patterns, excessive bycatch, and lower product quality.

Traditional solutions to the problem of open access, such as regulations defining allowable gear types, fishing areas, fishing seasons, and total catch, have not succeeded in achieving economic sustainability. This “command-and-control” type of management has sometimes stabilized or reversed the decline in the biological status of stocks, but has not been able to produce positive net economic benefits to the Nation. That is, while some of the Nation’s fisheries are considered sustainable from a biological perspective, they may still be economically unhealthy in the sense that the same level of harvest could be achieved with less effort, and at lower cost.

In 1993, of the 163 U.S. fisheries whose biological status could be assessed, 40% were classified as overutilized and 43% were fully utilized. Among these are the valuable New England groundfish, Atlantic scallop, Gulf of Mexico

Introduction



King crab (NMFS photo).

shrimp, and Alaska king crab fisheries (USDOC, 1993). In some of these fisheries, drastic measures have been implemented to halt the decline in stock levels. For example, in the Northeast Region, current management of the groundfish and scallop fisheries requires a 50% reduction in fishing effort over the next five years just to stabilize the stocks. In Washington and northern Oregon, the commercial salmon fishery was closed down completely in 1994. The U.S. total allowable catch (TAC) for Atlantic swordfish declined 13% between 1994 and 1995, and will decline another 12% in 1996. Causes typically cited for the declines include overfishing, deteriorating environmental conditions, loss of habitat, and changing oceanographic conditions. On the other hand, Alaska pollock and other groundfish are considered biologically healthy, and harvests of these Alaska resources accounted for almost half the volume of the total U.S. harvest in 1994, and about 15% of the ex-vessel revenues (USDOC, 1995). However, these high harvest levels are achieved by increasingly more and bigger vessels fishing during shorter and shorter seasons. These inefficiencies result in tremendous costs to the Nation.

Support for managing fisheries for economic growth is embodied in the Magnuson Fishery Conservation and Management Act (MFCMA), which defines optimum yield as "... the amount of fish (A) which will provide the greatest overall benefit to the Nation, with particular reference to food production and recreational opportunities; and (B) which is prescribed as such basis of the maximum sustainable yield from such fishery, as modified by any relevant economic, social, or ecological factor (USDOC, 1990)." The MFCMA also provides guidelines for using economic principles in



Pollock (NMFS photo).

the development and modification of fishery management plans. Furthermore, under Executive Order 12866, regulations should have the goal of maximizing net benefits for society.

However, economic sustainability in fisheries, and greater net economic benefits to the Nation, can only be achieved by attacking the fundamental problem of open access head on. This requires implementation of controlled access management systems that provide fishermen with a vested interest to harvest quotas efficiently and in the least-cost fashion. The benefits to controlling access include steady harvest of fish throughout the season, stable prices, high product quality, efficient use of capital and labor in the overall economy, and safer fishing operations. In the few U.S. fisheries where controlled access systems have been implemented, the results have been favorable: ex-vessel prices are up, landings are spread more evenly throughout the season, capital (in the form of vessels) has been reduced, and stock levels are stable (see the Northeast Region's spotlight article on surf clam management, and the Southeast Region's harvest sector report on wreckfish management).

There is increasing pressure to allocate scarce fishery resources between competing commercial and recreational users, as well as environmental groups and other "nonconsumptive" users. To maximize net benefits for society, total allowable catches (TAC's) have to be allocated efficiently and equitably among user groups. Fisheries managers will need rigorous analyses of the economic value of alternative uses of fisheries to compare the costs and benefits of various management alternatives and to make defensible allocation decisions. As fisheries become more limited, management decisions will probably become

more contentious and more likely to be challenged in court. Information that allows the agency to demonstrate quantitatively that a chosen regulation has the highest net benefit to society is critical.

The role of this report is to provide a snapshot of the economic health of U.S. fisheries. Given NOAA's goal of sustainable fisheries, assessing some baseline measure of health now can help the agency gauge the degree and speed of progress made toward its goal over time. Since the economic tools and definitions used to measure the status of fisheries differ from biological tools, Chapter 1 describes these tools and their use in determining the value of fisheries to society. The primer provides explanations and definitions of basic economic concepts, approaches, methodologies, and tools of analysis.

Chapter 2 presents descriptive information regarding the current economic status of U.S. fishery resources at the national level. It also presents a review of some of the social, institutional, and economic forces that have shaped the development of the Nation's fisheries. The chapter includes a discussion of the retail demand for seafood. Detailed interpretation of trends in important fisheries by NMFS region are contained in the regional analyses of Chapters 3-7. The national and regional descriptive reports distinguish between the harvest, processing and wholesaling, recreational, and trade sectors since these represent the sectors associated with the fishing and seafood industry most likely to be impacted by fisheries management. A time frame of 1984 to 1993 is used wherever possible to capture gross changes in fishery conditions over the past decade and to provide some evidence of recent trends. All prices and values are reported in 1987 dollars unless otherwise indicated (i.e. nominal values are deflated by the Gross Domestic Product implicit price deflator, which uses 1987 as a base year).

In addition to the regional reports, a topical fisheries economic issue from each of the NMFS regions is analyzed. The issues addressed within these "spotlights" include: the rise and fall of the U.S. Pacific tuna industry; two facets of the problem of bycatch, one in the Alaskan groundfish fishery and one in the Southeast reeffish fishery; Hawaii's experience with limited entry programs; and the impact of ITQ's on the surf clam/ocean quahog fishery in the Northeast.



Tuna (NMFS photo).

Thus, the initial chapter of this report lays the groundwork for understanding how economic theory and analysis can be used in the fisheries management process, the spotlight articles illustrate the range and complexity of the real problems encountered by fisheries managers, and the descriptive chapters document important trends in U.S. fisheries. During the compilation of this report, for many fisheries the preferred indicators of economic health and measures of economic value could not be calculated due to a lack of appropriate data. In these cases, rather than presenting actual economic analyses, the report highlights what could be done if economic data were available, why economic analysis is important, and how this information could be used by fisheries managers. It also identifies data needs that have to be met to assess economic sustainability. A goal for future editions in this series is to be able to systematically evaluate the economic health of U.S. fisheries, using well-defined analytical indicators, as the appropriate data become available.

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